STRUCTURAL BEHAVIOUR OF REINFORCED CONCRETE WALL PANEL USING CONCRETE WASTE AS AGGREGATE UNDER ECCENTRIC LOADING

By

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DECLARATION

I **Jerrisly Bin Sulindap, 2006876471** confirm that the work is my own and that appropriate credit has been given where reference has been made to the work of others.

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Date :1/12/2008.....

ABSTRACT

Steel fabric reinforced concrete wall panel currently use in high rise building especially construction industry in Klang Valley, Malaysia. However, practices use of recycled concrete aggregate as coarse aggregate in concrete mix for production of wall panel is very limited as caused by limited of knowledge. Since that, a better understanding of wall panel using concrete waste as coarse aggregate is important to wide spread use of concrete waste as course aggregate and to construct a safety and effective building. Thus, this research will study the structural behaviour of the reinforced concrete wall panel with recycled concrete aggregate as aggregate.

This research will be carrying out experimentally involve two steel fabric reinforced concrete wall panel with double layer of steel fabric type B7 with size 75 x 1000 x 1500 mm (Width: Length: Height). The aspect ratio (h/L) is 1.5 and the slenderness ratio (h/L) is 20. The wall panels construct using concrete Grade 30 Normal Ordinary Portland Cement (OPC) and recycle concrete waste as course aggregate with a water cement ratio of 0.55. The wall panel will be tested under compressive axial load with eccentricity, e = t/6 with fixed at bottom and pinned at above edge until failure. Information found from this study will enhance the knowledge of reinforced concrete wall panel.

Experiment result showed that wall panel 1 showed buckling failure where wall panel 2 showed cracking at top and middle of the wall panel. The average ultimate load of the wall panel is 1274 kN. This value was higher than wall panel using natural aggregate and lower than wall panel using concrete waste but tested under axial load without eccentric loading. Using concrete aggregate will increase the ultimate load of the wall panel and wall panel will easier to fail under eccentric loading. Using concrete waste as course aggregate in construction of wall panel is better than using natural aggregate as the ultimate load is higher. The structural behaviour is same with natural aggregate in term of properties studied. Concrete waste as aggregate can be as an alternative to replace the shortage natural aggregate. Utilization of concrete waste also promotes reduction of wastage of construction material.

Keyword: concrete wall panel, steel fabric, recycle concrete waste, axial load.

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